

## **Appendix C**

### **Central Marin Sanitation Agency Pilot Study Report**

California Environmental Protection Agency  
Environmental Management System Project

#### **1.0 Pilot Description**

The Central Marin Sanitation Agency (CMSA) is a public agency in Northern California that operates a regional wastewater treatment facility. CMSA treats sewage collected from San Rafael Sanitation District, Sanitary Districts No. 1 and No. 2 of Marin County, and San Quentin State Prison. CMSA is a medium-sized wastewater treatment facility with an average dry weather flow of 10 million gallons per day (MGD) and a 90-MGD peak wet weather flow. The facility is capable of handling up to 125 MGD. The facility currently employs 40 individuals to perform the daily maintenance, operation, and administrative tasks of the wastewater treatment facility.

Under contract, CMSA maintains pump stations in Sanitary District No. 2 and a hydrogen peroxide injection station near the prison. The treated effluent is discharged into San Francisco Bay through an outfall structure owned and maintained by CMSA. The biosolids from the treatment process are either applied as soil enhancement for agriculture in Sonoma County or taken to Redwood Landfill in nearby Novato where they are processed for compost, used for alternative daily cover or directly disposed of at the landfill.

CMSA holds a National Pollution Discharge Elimination System (NPDES) permit for discharge into San Francisco Bay. The permit mandates that CMSA have programs for regulation of users of the sanitary sewers, namely the Pretreatment Program and the Pollution Prevention Program. An important element of the Pollution Prevention Program is regulation of over two hundred automobile repair shops.

#### **Pilot Project Management**

The CMSA was selected to participate as a pilot in the project in June 2000. The Cal/EPA project manager is Jeffrey Albrecht, a Water Resources Control Engineer at the State Water Resources Control Board (SWRCB). CMSA established a Steering Group for the creation and management of their EMS with the appropriate supervisory level plant personnel.

The CMSA EMS Steering Group<sup>1</sup> consists of the following members:

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<sup>1</sup> The Steering Group included an outside consultant that provided assistance in developing aspects and impacts.

- Dick Lindgren (Maintenance Superintendent), Team Leader;
- Bob Adamson (Industrial Waste Inspector);
- Glenn Thurkow (Finance Manager); and
- Susan Halpin (Operations Superintendent).

## **History of Environmental Management at CMSA**

Prior to CMSA's participation in the EMS pilot project, the facility operated with only essential environmental programs, such as, the Pretreatment Program, a Storm Water Pollution Prevention Plan, an annual NPDES permit monitoring report to the Regional Board, and an annual Pollution Prevention Program report to the public. As it was, there existed no overarching system that tied all of the management activities at CMSA together.

Historically, CMSA maintained an annual list of objectives and targets established under the regulatory framework as it related to discharge, disposal, and emissions within their facility, but there was no formal framework for establishing those targets and objectives. In addition, the existing objective and target evaluation system had virtually no focus on environmental impacts outside of those required by law. Aspects outside of legal requirements were not used as criteria in establishing objectives, and there was no participation by external parties outside of the regulatory framework in formulating targets and objectives. The CMSA staff worked collaboratively in problem solving plant issues on an informal level, and consequently, CMSA's annual capital improvement projects were created on an 'as needed' basis or as a reaction to a problem.

CMSA previously had not formally documented work instructions or Standard Operating Procedures (SOPs) for plant processes. The documentation related to plant activities consisted of a centrally located and hard copy filing system, as well as a computer network system. Document control was typically controlled by a select few and document maintenance was limited and non-systematic. An EMS requires the establishment of a centralized and comprehensive document collection system, that the system be available to the plant staff and that documents are maintained and updated with the latest information.

The facility's regulatory compliance has been adequate with an average history of non-compliance issues for a medium-sized wastewater treatment facility due to periodic plant upsets and effluent permit level exceedances. They remain in good standing with the State.

CMSA agreed to implement an Environmental Management System (EMS) in an effort to improve the management of both the wastewater plant environmental aspects, as well as, the environmental aspects of the dischargers contributing to their flow, such as auto maintenance facilities. CMSA's operations primarily impact water-related media, however, air and land aspects are also affected, as well as other regulated and non-regulated issues. The EMS is being implemented to address all of these in a multi-

media approach. CMSA also aspires to create a template EMS program for the auto repair shops operating within their collection system. If successful in developing a suitable template, CMSA will consider regulatory revisions to encourage auto repair facilities to use an EMS to manage their regulatory compliance and environmental impacts. CMSA's ultimate goal is to achieve ISO 14001 certification for their treatment plant as well.

CMSA has been in the unique position of spearheading an EMS program within the public-sector, wastewater treatment industry. CMSA is still in the early stages of EMS implementation and achieving their ISO 14001 Certification. Significant challenges encountered during the beginning of the EMS pilot project hindered some aspects of their progress, yet the desire to earn ISO 14001 Certification is still the objective, with a goal of early 2003. For the purposes of Cal/EPA research, CMSA's EMS is considered in the early design and implementation stage.

## **2.0 Project Objectives**

The pilot project with CMSA was conducted in order to meet the following objectives specified in AB 1102 (Stats. 1999, Ch. 65) codified in Public Resources Code, Section 71045 et seq.

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|--------------------|---|
| <b>Objective 1</b> | Whether and how the use of an environmental management system (EMS) by a regulated entity increases public health and environmental protection over their current regulatory requirements <sup>2</sup> ; and                    |
| <b>Objective 2</b> | Whether and how the use of an EMS provides the public greater information on the nature and extent of public health and environmental effects than information provided by their current regulatory requirements <sup>3</sup> . |

To the above, the Cal/EPA added the following objectives:

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| <b>Objective 3</b> | Evaluate economic indicators to determine incentives and barriers to EMS implementation |
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<sup>2</sup> Protection provided by current regulatory requirements is defined as those protections provided through the issuance, enforcement, and monitoring of any permit, requirement, authorization, standard, certification, or other approval issued by a federal, state, regional or local agency to the regulated entity for the protection of the public health or the environment (PRC § 71046(a)(1)).

<sup>3</sup> Information provided by current regulatory requirements is defined as that information provided through the issuance, enforcement, and monitoring of any permit, requirement, authorization, standard, certification, or other approval issued by a federal, state, regional or local agency to the regulated entity for the protection of the public health or the environment, or any other law or regulation governing the disclosure of public information (PRC § 71046(a)(2)).

**Objective 4** Identify challenges and successful examples of EMS implementation

Further, each pilot participant had one or more additional pilot specific objectives. The pilot specific objectives for CMSA were to:

**Objective 5** Evaluate the value of Cal/EPA sponsored EMS training;

**Objective 6** Assess the impact of a Local Advisory Group (LAG) participating in the EMS development process; and

**Objective 7** Evaluate the value of a wastewater treatment plant EMS template.

In the following sections, each objective will be paraphrased. For example, Objective 1 is referred to as simply environmental protection. The term environmental protection is intended to capture protection of both environmental and public health.

### **3.0 Project Methodology**

CMSA has contributed data consistent with the National Database and the California Protocols. In addition to the protocols, CMSA conducted site tours of their facility for the Cal/EPA Team and Working Group members. They also conducted periodic meetings with their Local Advisory Group (LAG). The LAG represented interested parties from the regulatory agencies (Regional Water Quality Control Board), local environmental groups (Marin Environmental Forum, Marin Conservation League, and Audubon Society) the local Certified Unified Program Agency (CUPA) (San Rafael Fire Department), and the manager for the Marin Municipal Water District.

For this project, CMSA submitted baseline data for the years 1996, 1997, and 1998. The first round of update data was submitted for the year 1999, and the second round for the year 2000. However, since CMSA is still in the development stage of their EMS, the data for 1999 and 2000, for the purposes of this pilot study, will be used as baseline data.

The analysis is accomplished by evaluating changes in environmental protection and changes in the provision of environmental information to the public as a result of EMS implementation at CMSA. Economic data is not available; therefore, economic costs and benefits of EMS implementation cannot be analyzed for this pilot. The final section discusses challenges and successes from EMS implementation and provides an accounting of lessons learned. These lessons are supported by data, interviews with the pilot and observations of the Cal/EPA project manager.

#### **3.1 Objective 1 Environmental Protection**

To determine whether and how improved environmental protection resulted from EMS implementation, the following three primary categories of information were evaluated.

1. Awareness and commitment
2. Systematic management of environmental impacts
3. Environmental performance indicators

*Awareness and Commitment* refers to the scope of environmental issues to which the organization devotes its attention, and identifies increased knowledge and understanding of environmental impacts, as well as recognition that action is necessary to lessen impacts and improve environmental protection.

Staff reviewed and analyzed the following measures of Awareness and Commitment:

1. The presence of an environmental policy which describes the organization's commitments and principles in regards to environmental protection.
2. Demonstrated knowledge and understanding of environmental laws, regulations, and other requirements.
3. Demonstrated knowledge and understanding of the environmental impacts of the organization.
4. Documentation of objectives and targets for environmental protection improvements.

*Systematic management of environmental impacts* refers to the ability of an organization to better protect the environment through a more mature and effective system of environmental management.

Staff reviewed and analyzed the following measures of systematic management for environmental protection:

1. Documented implementation strategies and responsibilities designed to meet regulatory requirements, manage significant aspects, and achieve objectives and targets for improved environmental protection.
2. Measures to assess environmental performance.
3. Audit and review processes to assess the performance of the management system and make system adjustments in order to continually improve environmental performance and protection.

*Environmental performance indicators* are the most quantitative and direct way of measuring changes in environmental protection. Key environmental indicators are the direct performance measure of an EMS. Examples include energy use, water use, solid and hazardous waste reduction, air emission, and quality of water discharge. An analysis of key environmental indicators provides information as to whether an EMS improves environmental protection.

Project staff reviewed and analyzed environmental data in the following areas to determine whether the EMS improved environmental protection.

1. Progress towards objectives and targets,
2. Pre and Post EMS Environmental Performance
3. Performance Beyond Regulatory Requirements
4. Compliance Performance

### **3.2 Objective 2**      Environmental Information

Staff analyzed the following two factors to determine whether and how an EMS provides greater environmental information to the public.

1. The level of public and stakeholder involvement into the EMS development, implementation, and review; and
2. The level of improvements in the accessibility and quality of environmental information available to the public as a result of EMS implementation.

The level of public and stakeholder involvement into EMS development, implementation and review not only indicates changes in communication, it also indicates a changing stakeholder role in improving environmental protection. Involvement provides avenues for stakeholder response to environmental information and feedback to the organization on their performance. This indicator of greater environmental information is measured by evaluating actual stakeholder participation in the pilot's EMS and processes in the EMS for outside communication. This information was collected through the National Database, California Protocol and through Cal/EPA Project Manager's observations.

Improvements in the accessibility and quality of environmental information were evaluated using the California Protocols. Improvements in compliance with legal reporting requirements and information sharing beyond legal requirements indicate improved communication to the public. Accessibility and quality (timeliness, relevance, completeness, and credibility) is evaluated to determine whether the EMS results in greater information available to the public.

### **3.3 Objective 3**      Economic Indicators

Economic data was not provided by this pilot; therefore this analysis is not included in the pilot study report.

### **3.4 Objective 4**      Identifying Other Challenges to Successful EMS Implementation

Each pilot project offers unique experiences that provide lessons on the challenges inherent in the successful implementation of an EMS within their industry. These lessons help develop an understanding of the necessary or critical elements for successful EMS implementation. Challenges and successes were identified through the Cal/EPA and U.S. EPA Project Managers' observations, interviews with CMSA personnel and data analysis.

### **3.5 Objective 5**      Evaluate the Value of Cal/EPA Sponsored EMS Training

The value was determined by the Cal/EPA project manager observations, information collected in interviews with CMSA personnel and data analysis.

**3.6 Objective 6** Assess the Impact of a Local Advisory Group (LAG) Participating in the EMS Development Process

The impact was determined by the Cal/EPA project manager observations, information collected in interviews with CMSA personnel and data analysis.

**3.7 Objective 7** Evaluate the Value of a Wastewater Treatment Plant EMS Template

The value was determined by the Cal/EPA project manager observations, information collected in interviews with CMSA personnel and data analysis.

**4.0 Discussion and Analysis**

**4.1 Objective 1** Environmental Protection

**Awareness and Commitment**

Environmental Policy

CMSA has adopted a comprehensive Environmental Policy (EP) outlining their commitment to improve the environmental performance of their wastewater treatment facility.

The CMSA Environmental Policy states:

“CMSA is committed to promoting a healthy environment. We shall strive to optimize our treatment and re-use processes while minimizing the adverse environmental impacts resulting from our activities.

Commitments:

- To comply fully with the letter and spirit of relevant environmental laws and regulations. There shall be thorough and accurate measurement and reporting of our environmental compliance.
- Prevention of Pollution. This shall mean avoiding or reducing environmental pollution produced directly from CMSA operations. It shall also mean avoiding or reducing pollution produced indirectly by the consumption of power, fuel, chemicals, and other resources by CMSA.
- To continually improve our performance relevant to this environmental policy.
- To foster openness and dialogue with employees and the public, anticipating and responding to their concerns about potential hazards and impacts of our operations.”

CMSA's Environmental Policy contains the standard commitment of complying with environmental legislation and regulations, pollution prevention, and continual improvement of environmental performance. The scope of the EP is intended to cover all of the processes within the wastewater facility along with both direct and indirect impacts. The EP also makes a commitment to the employees of CMSA and the public they serve by creating communication channels and improved dissemination of information in an effort to empower those in less influential positions.

CMSA's EP marked the initial step for their facility in addressing environmental impacts beyond the obligations outlined in regulatory requirements. The commitment by CMSA outlined in the EP demonstrated a new level of awareness not previously observed prior to the initiation of the EMS.

#### Knowledge and Understanding of Legal Requirements

CMSA participates in a number of organizations relevant to the wastewater industry in an effort to identify and maintain legal obligations, such as, the California Association of Sanitation Agencies (CASA), California Water Environment Association (CWEA), and the Bay Area Clean Water Agencies (BACWA). They also utilize professional publications, legal council, and updates from the State regulatory agencies to stay abreast on applicable environmental, and health and safety requirements.

While CMSA had an existing knowledge of the legal obligations surrounding plant operations prior to the EMS, during the design phase a second party audit by a consultant did reveal some additional issues. The process of systematically evaluating their regulatory obligations and the system for handling those requirements revealed gaps in their understanding regarding what agencies govern their environmental impacts. CMSA now has an improved picture of how their environmental stewardship is related to cross-media environmental impacts and the bodies that govern them. The second party audit simply rounded out their understanding, but significant impacts or changes in the management of legal obligations were not observed.

#### Knowledge and Understanding of Environmental Impacts

A critical element of an EMS involves identifying and prioritizing the environmental aspects and impacts associated with a facility. The process of identifying environmental aspects and impacts is important because high-priority environmental aspects and impacts are considered when environmental objectives and targets are established.

An environmental aspect is an element of an organization's activities, products, or services that can interact with the environment. Chlorination is a wastewater disinfection treatment activity and an associated aspect is excessive chlorine residual in the outfall discharge. This aspect may have a significant impact on the receiving water body, such as, the low-level toxicity to aquatic life.



Significant aspects and impacts are determined by the organization based on a self-established standard methodology. Management of all significant aspects is required by ISO 14001. Significant aspects are therefore a good indicator of awareness and commitment. Table 1 lists significant aspects and impacts for CMSA.

CMSA created a sweeping analysis of their wastewater treatment facility as they scrutinized all potential sources for environmental impacts. The CMSA Steering Group created a spreadsheet of about 200 prospective impacts as they considered the treatment plant from the headworks all the way through to the plant outfall in addition to all of the peripheral treatment activities.

The Steering Group prioritized the candidate impacts based on environmental impact, human safety, regulatory compliance significance, probability of significant impact, feasibility of controlling and measuring impact, etc., and each category was assigned a weight based on the level of significance. After the Steering Group assigned values to every category and tallied the totals, a threshold level was established, and all aspects and impacts above that threshold level were deemed priority issues.

CMSA's top environmental aspects and impacts are:

- Co-generation process emissions
- Energy and potable water consumption
- Disposal of solid and hazard waste
- Re-use and disposal of biosolids
- Chemical use during disinfection and dechlorination processes

#### Documentation of Objectives and Targets

Objectives and targets are listed on Table 2 and demonstrate environmental commitments. After CMSA identified their priority aspects and impacts, the leading issues were used to create a list of objectives and targets. While CMSA has created a list of objectives to be attained and outlined a goal for each of the performance-based objectives, a quantitative target has not yet been defined for each objective. Therefore, the status for each objective is still considered under development by the Steering Group.

Each of the objectives and targets was categorized under one of the following Environmental Programs:

- Air Emissions;
- Energy Management;
- Water Conservation;
- Reliability & Safety;
- Chemical & Waste Management, and
- Effluent Quality Management.

As Table 2 indicates, half of the objectives are regulated, while the other half of the objectives is aimed at non-regulated environmental impacts.

### **Systematic Management for Environmental Protection**

Various elements involved in system design have been implemented at CMSA or are in the process of being implemented. CMSA is developing systems for improved environmental protection which include:

- Operational Controls;
- Training Programs;
- Emergency Preparedness;
- Compliance Assurance;
- Employee Involvement and Communication;
- Pollution Prevention Programs, and
- Health and Safety.

*Operational controls* have not changed significantly since the initiation of the EMS process, but it will become increasingly significant as CMSA looks to optimize the wastewater treatment processes.

*Training programs* include:

- Integrated health and safety and emergency response;
- Hazardous waste management;
- First aid and cardiopulmonary resuscitation (CPR);
- Hazard Communication/Proposition 65;
- Injury and illness prevention, and
- Contingency plan, fire prevention and emergency action.

While these training programs were in place prior to developing the EMS, each program is being integrated into the EMS training process as an overarching training program.

An *Emergency Preparedness and Health and Safety Plan* is on file with the City of San Rafael Fire Department. Selected personnel are trained to respond to emergencies such as hazardous spills and fires, but prevention is emphasized. Employees have been trained to implement evacuation procedures, including the use of proper personal protective equipment, and the removal of incompatible materials. These emergency procedures were already in place prior to initiation of the EMS process; therefore, the EMS did not have an impact in its development.

As a wastewater treatment plant, CMSA's main focus is to treat wastewater to levels defined in their discharge permit. The wastewater industry is heavily regulated because their existence is based entirely on assuring public health and reducing environmental impacts. Therefore, *Compliance Assurance* is one of the highest priorities at CMSA's wastewater treatment plant. CMSA's proactive efforts may eventually extend their environmental performance beyond compliance.

*Employee Involvement* is one outgrowth of the EMS development process as demonstrated by the establishment of an EMS Steering Group. Supervisors from the different wastewater plant divisions meet regularly to discuss the EMS program. The roles and responsibilities for developing the EMS program are assigned to key personnel, and as the EMS program becomes integrated into the daily operations at the plant, staff level employees will become increasingly involved with sustaining EMS objectives.

*Pollution Prevention* is the existing objective at CMSA's wastewater treatment plant, but there are additional sources of potential pollution that CMSA addresses in their developing EMS program. CMSA has worked with local auto repair facilities within their collection system to implement a pre-treatment program, which will address their commitment to Pollution Prevention.

The treatment of wastewater at CMSA does have impacts on air quality in the form of unpleasant odors, and emissions from their co-generation plant. Each of these sources has also been prioritized on their objectives list as a feasible source for reducing environmental impact.

*Health and Safety* has always been a prominent issue for plant personnel, but the EMS program has added new dimensions to the precautions required around hazardous chemicals. As previously mentioned, Reliability and Safety is one of the Environmental Programs CMSA has created to manage their objectives and targets. The Reliability and Safety program currently includes a comprehensive safety review for the entire facility, which will validate the appropriateness of existing safety measures while potentially identifying shortcomings in the system.

#### Measure to Assess Environmental Performance

In order to measure environmental performance at CMSA, the Steering Group decided to track their environmental performance based on the amount of wastewater treated annually. The amount of wastewater treated, measured in millions of gallons, is the independent variable that will influence plant operations and thus the extent of environmental impacts. Therefore, all environmental performance data has been normalized against the total annual wastewater flow.

#### Audit and Review Processes for Continual Improvement

Since CMSA is still in the development stage of their EMS, the audit and review processes cannot yet be evaluated, but the baseline data provided through the National Database will provide substantial background into levels of improvement. In addition to the National Database, CMSA's current objectives and targets list includes comprehensive baseline audit for both their safety procedures and power consumption throughout their facility. Each of these baseline audits will add to the structure for the

audit and review of their EMS in order to establish where and how continuous improvement can be observed or evaluated.

## **Environmental Performance Indicators**

This section describes actual environmental performance of the pilot project during the study period. Progress towards objectives and targets, environmental performance indicators, performance compared to regulatory requirements, and compliance history is analyzed to determine whether CMSA's EMS has improved environmental protection.

### Progress towards Objective and Targets, Table 2

As previously mentioned, Table 2 lists the current objectives and targets for CMSA, as well as the current status and whether the objective meets or surpasses regulatory requirements, or if the objective addresses non-regulated impacts.

CMSA has identified plant process odors, energy, potable water consumption, and a review of non-potable water consumption as priority non-regulated objectives. Each of the objectives has a preliminary target designated without a defined deadline or quantifiable goal because CMSA is still in the midst of solidifying those targets based on available budget and personnel.

Each of the remaining targets categorized as regulated are intended to simply meet regulatory guidelines by establishing a more proactive and comprehensive approach to maintaining compliance. The concept is to completely eliminate regulatory violations and extend performance into a level above and beyond the defined regulatory parameters.

CMSA has not been successful in establishing quantifiable goals, and the delay has hampered the development of their EMS program. After CMSA assessed aspects and impacts and began to identify targets and objectives, they partially suspended work on their EMS. This was due to a reorganization of the Steering Group staff, as previously mentioned. Once CMSA has allocated the proper resources and established commitments at all levels of their staff, the EMS program should progress smoother and eventually the objectives will be realized, but until then the EMS development will continue to be slow.

### Pre and Post EMS Environmental Performance, Table 3

The environmental performance data in Table 3 is not applicable for analyzing the impact of the EMS program at CMSA. The Steering Group at CMSA is still in the development stage; therefore, all of the data provided should be considered baseline data. Any significant changes in environmental performance, positive or negative, observed in the Table 3 data cannot be directly attributable to the CMSA EMS program.

The most significant changes to be observed in Table 3 can be found in the first four categories:

- Electricity Purchased;
- Electricity Generated;
- Natural Gas Consumed, and
- Digester Gas Consumed.

These categories all relate to a project CMSA developed prior to initiation of the EMS program, but are an excellent example of reduced environmental impacts through innovative technologies. CMSA designed and installed a co-generation process at their facility, which recycles the gas produced by the wastewater biosolids.

The table clearly demonstrates that when the system came on-line in 1998, CMSA began to generate their own electricity initially at a rate of over 1,000 kilowatt-hours per million gallons of wastewater treated (kWh per MG), and that rate has increased to over 1,200 kWh per MG since 1998. The production of electricity is paralleled by the sharp increase in the amount of digester gas (from the biosolids) and natural gas consumed which powers the electricity generation.

The overall impact of this on-site power generation is summarized by the dramatic decrease in the amount of electricity purchased. Between 1997 and 1998, the amount of electricity purchased dropped by almost 70% per million gallons of wastewater treated in one year. In 1997, CMSA treated 3,785 million gallons (MG) and purchased 2,774,700 kilowatt-hours (kWh). While in 1998, CMSA treated a greater amount (by one-third) of wastewater, 4,950 MG, but required less than half the electricity than the year before, 1,123,000 kWh. Although, part of the savings in electricity is countered with an increase in the amount of natural gas consumed, but this project overall has likely reduced environmental impacts.

While this project cannot be attributed to the EMS program, it does demonstrate the effect of a system evaluation and the proactive efforts to reduce environmental impacts. It can also be acknowledged as a stepping-stone for future EMS projects as an example of cost-savings and improved plant efficiency.

#### Performance beyond Regulatory Requirements, Table 4

The data contained in Table 4 is intended to demonstrate how CMSA's facility performs against their permitted emissions. The majority of the regulated parameters outlined in the table are from their National Pollution Discharge Elimination System (NPDES) permit, which is required under the Clean Water Act for discharges to surface water. The final three parameters are regulated under landfill requirements and the Clean Air Act.

The Regional Water Quality Control Board (RWQCB) permits the treated wastewater effluent at CMSA. The RWQCB issues the National Pollution Discharge Elimination

System (NPDES) permits with specific criteria for monitoring the treated wastewater discharged to surface water.

The permitted emissions outlined in Table 4 are cited from CMSA's permit. The table reveals that CMSA has consistently operated within permit guidelines. The "Chlorine Residual" and "Fecal Coliform Bacteria" categories document the facility's annual maximum value rather than its average. The average value for those two categories was within the NPDES operating guidelines.

The NPDES permit must be renewed every five years, and CMSA's permit was renewed in September 2001. Therefore, the CMSA NPDES permit will not be due for renewal until September 2006. The RWQCB will typically apply increasingly stringent discharge requirements on the wastewater treatment plant (WWTP), therefore, driving the plant to improve the effluent quality. While improving the effluent quality is not a current objective for the EMS, peripheral improvements could be realized through other improvement projects. In addition, future significant impacts could revolve around the wastewater effluent, so targeted objectives may then be set for the wastewater effluent.

#### Compliance Performance, Table 5

The data in Table 5 is a summary of compliance history at the CMSA wastewater treatment facility. All infractions reported in the table are exceedances of NPDES effluent limits, except for the two "potential non-compliances". The documented potential non-compliances were spills of hazardous material, which were contained in-plant and cleaned by CMSA personnel. Each of the spills were reported to the local Fire Department as required by law.

The non-compliance history category does indicate an obvious trend in decreasing violations, but the improvements have occurred independent of the EMS program. The appearance of "moderate violations" in 2000 is not necessarily a reflection of plant performance but may be attributable to a change in applicable law. California State Bill 709, effective in 2000, mandated a monetary fine for exceedances (settleable solids and short duration/intensity chlorine residual events) which the Regional Water Quality Control Board did not previously consider permit violations.

#### **4.2 Objective 2      Environmental Information**

##### **Public and Stakeholder Involvement in the EMS Development, Implementation and Review**

Cal/EPA established stakeholder Working Groups in both Northern and Southern California. Participation in one of those working groups was a requirement for inclusion in the pilot project. Working Groups were established to encourage stakeholder involvement and solicitation of their advice in meeting the objectives of the Cal/EPA pilot project. Although pilot project participation with stakeholders through the Working Group was a project requirement, the experience of CMSA in this setting has provided

information as to the willingness of parties to work together as well as the value of that relationship. CMSA participated in the Northern California Working Group and hosted an on-site meeting and facility tour on March 21, 2001.

As previously mentioned, CMSA also formed a Local Advisory Group (LAG), which represented interested parties from the regulatory agencies (Regional Water Quality Control Board), local environmental groups (Marin Environmental Forum, Marin Conservation League, and Audubon Society) the local Certified Unified Program Agency (CUPA) (San Rafael Fire Department), and the manager for the Marin Municipal Water District. The LAG met periodically and was effective at conveying the interests of the immediate public and supporting the progress of the EMS program. The LAG took part in the review of the aspects and impacts and provided feedback to the Steering Group regarding the progress of the EMS.

Prior to the initiation of the EMS program at CMSA, none of the stakeholders were recognized by CMSA and there was no LAG either. Early on in the creation of the EMS program at CMSA, the upper-level management elected to postpone development of the EMS due to conflicts regarding the impacts the EMS would have on plant management and operational procedures. The LAG members were concerned about a request by CMSA management to delay EMS implementation. The LAG spoke publicly at a CMSA Board meeting in support of the EMS program at CMSA. They testified as to the positive impacts the EMS would have on the community and the anticipated environmental impact reductions. A representative from Cal/EPA also testified in support of continuing EMS implementation. The Board agreed with the LAG and Cal/EPA, and the Board directed CMSA management to continue EMS implementation.

### **Public Accessibility and Quality of Environmental Information**

The data contained in Table 6 identifies environmental information type and availability to the public. This information has been analyzed to determine whether greater environmental information is available to the public than that which is required by law and regulations.

While there is no active source for reviewing the progress of the EMS or the relevant documentation, all EMS related information from CMSA is supposed to be available to the public upon request. This includes the EMS policy, environmental aspects and impacts, objectives and targets, resource use data, and solid waste data. In addition, there is information which is legally required to be shared with regulatory agencies, including compliance information, hazardous waste generation information, air emissions, water discharge information, Community Right-to-Know, and Proposition 65. Of course, CMSA has not been promoting the program to the general public, so the public would have to generate their own interest in CMSA's EMS and pursue the information on their own to increase their knowledge about the program.

As part of the Cal/EPA EMS Pilot Project, CMSA provided EMS information to the Northern California Working Group and the LAG, composed of government and non-

government organizations, during an EMS presentation to those groups on March 21, 2001, including aspects and impacts, tentative objectives and targets, and environmental performance. If members of the LAG attend monthly Steering Group meetings, the most current information can be attained, but there is no system in place for actively providing the latest details. CMSA did share information through Cal/EPA's quarterly reports and Cal/EPA's interim final report to the legislature. These reports are available through Cal/EPA's website.

As a result of the EMS, CMSA has generated a greater amount of environmental information on their impacts and activities than was available prior to the EMS, but the dissemination of that information has not been proactive. The EMS did help CMSA organize the information so that it could be usable internally as well as for external stakeholders like government or the community. The EMS at CMSA has generated an improved source of information and content, but the information has not been proactively conveyed to the general public beyond the LAG.

#### **4.3 Objective 3      Economic Indicators**

Economic indicators were not available from the pilot; therefore, an analysis of economic costs and benefits of EMS implementation is not included.

#### **4.4 Objective 4      Successes and Challenges of EMS Implementation**

The EMS project has proven to be a good methodology for creating a systematic approach to environmental improvements at CMSA. While CMSA's EMS program has not completed its implementation, and the targeted objectives are yet to be realized, the process has already successfully brought to light environmental issues not previously recognized at the wastewater treatment facility.

The EMS at CMSA was initially a well-received concept as an effective tool for achieving ISO 14001 certification. The upper-level management at CMSA made it a goal of theirs to attain certification for the wastewater treatment facility.

When CMSA's Steering Group was originally established, the team leader was Tom Rose, the Technical Services Engineer for CMSA. Mr. Rose was an avid believer in the potential for systematic environmental improvements to be identified and realized through the EMS process. As a champion for the EMS program at CMSA, Mr. Rose and the Steering Group were successful in accomplishing the first phases of the EMS process, but their growing commitment to the program also required incremental increases in both funding, manpower, and a push to evolve the management of the facility. Out of these issues grew conflict between the interests of the Steering Group and the focus of the upper-level management, and subsequently, Mr. Rose was asked to step down as the team leader for the EMS group. The Steering Group was subsequently rearranged into the format described in Section 1.0.



While the EMS program has still not reached full implementation, it has given staff level employees opportunities to convey their concerns upward through communication channels that did not previously exist. Specifically, an EMS has the ability to empower employees and create an open forum for staff to voice their concerns and interests.

Maintaining focus to assure implementation is successful can be a challenge for a small or medium-sized enterprise. This has been particularly true during the design and early implementation stage at CMSA. The Steering Group members represent multi-disciplinary interests and have diverse responsibilities. Accommodation of all these interests has periodically slowed down the progress of the EMS. In addition, the Steering Group experienced difficulty balancing EMS work with other priorities, but they expect this problem to decrease as their EMS is integrated into everyday operations at the wastewater plant.

**4.5 Objective 5** Evaluate the value of Cal/EPA sponsored EMS training for the employees

The Cal/EPA sponsored EMS training for the Steering Group and plant staff in an effort to promote the scope of an EMS and generate interest in the impacts an EMS can create. The training was very well received by CMSA, especially in light of their budget constraints. The EMS training allowed Cal/EPA to partake in the dissemination of the EMS program and improved the capacity for understanding an EMS at CMSA. The State funded training stimulated the initiation of the EMS program at CMSA.

**4.6 Objective 6** Assess the impact of a Local Advisory Group (LAG) participating in the EMS development process

The LAG, composed of interested parties from the water industry, local environmental organizations, State government, and local academia, was created as a resource for conveying the progress of the EMS to the public and as a venue for receiving feedback on the EMS from interest groups. The LAG has been effective at drawing attention to issues that CMSA may have overlooked but are significant to the public, such as, increased disclosure of environmental impacts, and they have been a powerful stimulus in generating progress in the EMS program. As previously mentioned, the LAG was also the motivation behind maintaining the EMS program at CMSA when upper-level management sought to dissolve the program. The LAG has become a representative for the public and an active participant in CMSA's EMS program to voice their concerns. The LAG has definitely had a significant and powerful impact on the EMS program at CMSA.

**4.7 Objective 7** Evaluate the value of a wastewater treatment plant EMS template

The prospect of creating a template for a wastewater treatment EMS appears both feasible and practical. The systematic evaluation of the CMSA wastewater treatment plant has revealed environmental issues that could easily be observed in similar facilities because of the similarity in wastewater plant processes and designs, and as a

public entity, plant process specifications could be openly shared amongst participating facilities. The categorization of objectives and targets into environmental programs is just one concept among many that could be used in other wastewater plant EMSs and alleviate some of the burden of recreating a manageable tracking system. Overall, a wastewater treatment plant EMS template would effectively streamline the implementation of an EMS program and potentially spur increased interest in attaining ISO 14001 certification.

## **5.0 Findings**

### **5.1 Objectives 1 Environmental Protection**

- CMSA's commitment to environmental protection is demonstrated in their environmental policy. CMSA commits to:
  - Comply fully with relevant environmental laws and regulations;
  - Prevention of Pollution;
  - Continually improve their environmental performance, and
  - Foster openness and dialogue with employees and the public.
- CMSA's commitment has led to specific EMS objectives that once the targets are achieved will reduce their impact on the environment, thus improving environmental protection.
- CMSA gained a more comprehensive knowledge and understanding of their legal requirements during EMS implementation. The awareness also expanded their understanding of what agencies govern their operations and how those agencies interact with one another.
- The introduction of the EMS process has already initiated several changes in the way CMSA manages their facility in regards to environmental protection:
  - The annual Capitol Improvement Projects report has evolved into a proactive approach to addressing environmental concerns before they become an issue. The intention is to no longer base Capitol Improvement Projects on whimsical decisions or reactions to an existing problem.
  - The EMS program has identified processes where additional monitoring and measuring may be necessary in order to properly manage environmental impacts.
  - The creation of the Steering Group has been the focal point for managing the EMS, but with continued progress, the program will become integrated into virtually every aspect of daily operations.
- The impact of the EMS program at CMSA has not yet been realized because implementation is not complete. The Steering Group has identified and prioritized their objectives, but a quantitative target still needs to be defined for each objective.

### **5.2 Objective 2 Environmental Information**

- Although there has been no broad distribution of EMS information to the public by CMSA, EMS information has been openly shared with the Northern California Working Group and the Local Advisory Group. Both of these groups are composed of interested parties from the wastewater industry, local environmental organizations, State government, and academia.

- CMSA created the Local Advisory Group as a means for generating stakeholder involvement. As it turns out, the LAG was a pivotal factor in making the EMS a success at CMSA. As the LAG continues to support the need for an EMS, the program will continue to progress in response to their support.

### **5.3 Objective 3**      Economic Indicators

Economic data is not available for CMSA's EMS; therefore, economic costs and benefits of EMS implementation cannot be analyzed.

### **5.4 Objective 4**      Successes and Challenges of EMS Implementation

- One of the key issues to a successful EMS implementation is the presence of a champion. CMSA had a champion when Tom Rose was heading the Steering Group, but he has since been removed from the team. The existing team still seems focused on completing the EMS and achieving ISO 14001 certification, but the loss of Mr. Rose may have taken some of the momentum out of their progress.
- There has been a lack of support by the upper-level management for the EMS program and that lack of support has significantly impacted the progress of the EMS.

### **5.5 Objective 5**      Evaluate the value of Cal/EPA sponsored EMS training for the employees of CMSA

The EMS training funded by Cal/EPA for the employees of CMSA was well received by the Steering Group and the upper-level management. The training provided a firm foundation in the principals of an EMS, and it laid the groundwork for the future of the EMS by educating those who would be actively participating in the program. Eventually, every employee at CMSA should be educated about the EMS and impacted by the program's policies.

### **5.6 Objective 6**      Assess the impact of a Local Advisory Group (LAG) participating in the EMS design process

The LAG was a pivotal factor in making the EMS a success at CMSA. For any other facility considering the implementation of an EMS program, it would be well advised to establish an advisory group in order to stimulate public participation and to create a venue for disseminating information regarding the progress of the EMS program.

### **5.7 Objective 7**      Evaluate the value of a wastewater treatment plant EMS template

The potential for a wastewater treatment EMS template appears promising due to the similarity in many municipal wastewater plants. The level of examination CMSA took on in investigating their facility was time-consuming, but it revealed new issues to consider as potential sources of environmental impact. A standardized template for examining a

wastewater treatment facility would eliminate some of the time involved along with improved confidence into the depth and breadth of issues considered in the facility.

## **6.0 Conclusions of the CMSA Pilot Project**

The EMS project at CMSA has not been fully implemented, but the program has already demonstrated the potential for making significant reductions in environmental impacts. Once the program has reached complete implementation and integration, continuous reductions in environmental impacts will be observed, much like that of the co-generation process' reduction in electricity purchased.

The EMS program at CMSA has also demonstrated the significance of a commitment from upper-level management to ensure a successful implementation. CMSA's EMS has lacked the continuous support of plant superiors for the program, and that lack of management support has reflected in the pace of the program implementation and available resources. Without a commitment from management, an EMS will likely fail due to constraints put upon budgets, personnel, and flexibility in modifying management practices.

The commitment level amongst Steering Group members can also measure the success of an EMS. Participants who are not dedicated to the success of the program can quickly undermine the effectiveness of the group. A champion can provide the leadership necessary to get the EMS heading in the right direction.

**Table 1. Significant Aspects and Impacts for Central Marin Sanitation Agency<sup>1</sup>**

Aspect	Regulated Impacts				Non-Regulated Impacts					
	Air	Water	Hazardous Material or Waste	Health & Safety (other)	Air	Water	Solid Waste	Energy	Material/Resource Input	Other
Cogeneration Process Emissions	Odors									
Facility Processes								Power Consumption		
Facility Processes & Maintenance						Potable Water Consumption				
No. 3 Water Uses								Power Consumption		
Hazardous, Universal, & Solid Waste Disposal			Regulatory Compliance				Landfill Use			
Biosolids Disposal & Re-Use	Dust & Odors			Nuisance Vectors						
Disinfection & Dechlorination		Chlorine Residual NPDES Violation								

<sup>1</sup> Data sources: University of North Carolina National Database Report, EMS Design Table 2: Activities, Aspects and Impacts; and Design Update Section 4.

**Table 2. Objectives and Targets for Central Marin Sanitation Agency<sup>2</sup>**

Objective	Target	Status	Regulated		Non-Regulated
			Meets	Beyond	
Plant Processes Odor Reduction	<ul style="list-style-type: none"> <li>Develop &amp; implement odor management plan.</li> <li>Reduce number of odor complaints.</li> </ul>	Under Development			X
Co-Generation Processes Regulated Pollutant's Emission Reduction	<ul style="list-style-type: none"> <li>Monitor emissions at a minimum frequency.</li> <li>No permit limit exceedances.</li> </ul>	Under Development	X		
Comprehensive Energy Audit	<ul style="list-style-type: none"> <li>Complete energy audit.</li> </ul>	Under Development			X
Potable Water Use Reduction	<ul style="list-style-type: none"> <li>Develop &amp; implement potable water use monitoring system.</li> </ul>	Under Development			X
Non-Potable Water Demand Study	<ul style="list-style-type: none"> <li>Complete water demand study.</li> </ul>	Under Development			X
Facilitate Wastestream Reductions & Assure Compliance	<ul style="list-style-type: none"> <li>Develop &amp; implement management plan for hazardous, universal, and solid waste.</li> </ul>	Under Development	X		
Prevent Public Relations Problems & Assure Compliance.	<ul style="list-style-type: none"> <li>Develop &amp; implement biosolids management plan.</li> </ul>	Under Development	X		
Reduce/Eliminate Effluent Chlorine NPDES Violations.	<ul style="list-style-type: none"> <li>Reduce number of effluent chlorine residual violations.</li> </ul>	Under Development	X		

<sup>2</sup> Data sources: University of North Carolina National Database Report, EMS Design Table 5: Planned Dates of Objectives and Targets; and Design Update Section 6.

**Table 3. Environmental Performance Measure for Central Marin Sanitation Agency<sup>3</sup>**

Indicator	Baseline Data									
	1996		1997		1998		1999		2000	
	Non-Normalized	Normalized (4,710 MG)	Non-Normalized	Normalized (3,785 MG)	Non-Normalized	Normalized (4,950 MG)	Non-Normalized	Normalized (3,979 MG)	Non-Normalized	Normalized (4,054 MG)
Electricity Purchased	3,838,700 kWh	815 kWh per MG	2,774,700 kWh	733 kWh per MG	1,123,000 kWh	227 kWh per MG	1,505,100 kWh	378 kWh per MG	912,263 kWh	225 kWh per MG
Electricity Generated	N/A	N/A	N/A	N/A	5,024,000 kWh	1,015 kWh per MG	5,045,800 kWh	1,268 kWh per MG	5,028,240 kWh	1,241 kWh per MG
Natural Gas Consumed	0 therms	0 therms per MG	127,000 therms	34 therms per MG	367,500 therms	74 therms per MG	306,600 therms	77 therms per MG	369,351 therms	91 therms per MG
Digester Gas Consumed	25,000,000 ft <sup>3</sup>	5,300 ft <sup>3</sup> per MG	17,500,000 ft <sup>3</sup>	4,600 ft <sup>3</sup> per MG	42,000,000 ft <sup>3</sup>	8,500 ft <sup>3</sup> per MG	51,100,000 ft <sup>3</sup>	12,800 ft <sup>3</sup> per MG	54,633,000 ft <sup>3</sup>	13,480 ft <sup>3</sup> per MG
Potable Water Used	254,700 ft <sup>3</sup>	50 ft <sup>3</sup> per MG	672,000 ft <sup>3</sup>	180 ft <sup>3</sup> per MG	146,400 ft <sup>3</sup>	30 ft <sup>3</sup> per MG	284,000 ft <sup>3</sup>	70 ft <sup>3</sup> per MG	320,070 ft <sup>3</sup>	79 ft <sup>3</sup> per MG
Gasoline Used	4,250 gallons	0.9 gallons per MG	4,050 gallons	1.1 gallons per MG	4,450 gallons	0.9 gallons per MG	4,284 gallons	1.1 gallons per MG	3,506 gallons	0.9 gallons per MG
Lubricants Used	1,650 gallons	0.4 gallons per MG	1,700 gallons	0.4 gallons per MG	2,530 gallons	0.5 gallons per MG	2,420 gallons	0.6 gallons per MG	2,530 gallons	0.6 gallons per MG
Hydrogen Peroxide Used	55,950 gallons	12 gallons per MG	85,320 gallons	23 gallons per MG	44,230 gallons	9 gallons per MG	52,900 gallons	13 gallons per MG	52,630 gallons	13 gallons per MG
Polymer Used	62,125 gallons	13 gallons per MG	78,040 gallons	21 gallons per MG	76,885 gallons	16 gallons per MG	95,940 gallons	24 gallons per MG	108,543 gallons	27 gallons per MG
Ferric Chloride Used	55,355 gallons	12 gallons per MG	49,876 gallons	13 gallons per MG	71,630 gallons	14 gallons per MG	66,400 gallons	17 gallons per MG	63,880 gallons	16 gallons per MG
Sodium Hypochlorite Used	99,610 gallons	21 gallons per MG	420,560 gallons	111 gallons per MG	367,750 gallons	74 gallons per MG	373,600 gallons	94 gallons per MG	420,780 gallons	104 gallons per MG
Sodium Bisulfite Used	84,900 gallons	18 gallons per MG	205,507 gallons	54 gallons per MG	128,530 gallons	26 gallons per MG	96,700 gallons	24 gallons per MG	94,090 gallons	23 gallons per MG
Nitrate Used	0 gallons	0 gallons per MG	119,070 gallons	31 gallons per MG	66,436 gallons	13 gallons per MG	84,870 gallons	21 gallons per MG	180,960 gallons	45 gallons per MG

MG = Million gallons (total treated annually)

KWh = kilowatt-hours

<sup>3</sup> Data sources: University of North Carolina National Database Report, Baseline Table 2: Environmental Performance Indicator Values; and Update Table 4: Environmental Performance Indicator Values.



**Table 4. Environmental Performance Compared to Regulatory Requirements for Central Marin Sanitation Agency<sup>4</sup>**

Regulatory Requirement			Objective and Target (if one identified for regulatory requirement)	Environmental Performance Measure				
Permitted Emission	Regulation	Permit limit		1996	1997	1998	1999	2000
BOD	Clean Water Act	25 mg/L	Maintain Compliance	8 mg/L	5 mg/L	6 mg/L	5 mg/L	5 mg/L
TSS	Clean Water Act	30 mg/L	Maintain Compliance	16.4 mg/L	9.8 mg/L	10 mg/L	8.3 mg/L	8.4 mg/L
Settable Matter	Clean Water Act	0.1 mL/L-hr	Maintain Compliance	0.1 mL/L-hr	0.06 mL/L-hr	0.06 mL/L-hr	0.05 mL/L-hr	0.06 mL/L-hr
Chlorine Residual	Clean Water Act	0.0 mg/L	Maintain Compliance	2.8 mg/L *	3.5 mg/L *	2.1 mg/L *	0.0 mg/L *	10.0 mg/L *
Fecal Coliform Bacteria	Clean Water Act	5-Day log mean: 200 MPN/100mL	Maintain Compliance	N/A	41 MPN/100mL *	228 MPN/100mL *	104 MPN/100mL *	130 MPN/100 mL *
Arsenic	Clean Water Act	200 µg/L	Maintain Compliance	0.6 µg/L	0.44 µg/L	0.82 µg/L	1.0 µg/L	0.85 µg/L
Cadmium	Clean Water Act	30 µg/L	Maintain Compliance	0.15 µg/L	0.15 µg/L	0.15 µg/L	0.2 µg/L	0.05 µg/L
Chromium	Clean Water Act	110 µg/L	Maintain Compliance	1.9 µg/L	2.5 µg/L	1.13 µg/L	0.9 µg/L	1.1 µg/L
Copper	Clean Water Act	37 µg/L	Maintain Compliance	6.3 µg/L	3.8 µg/L	4.3 µg/L	3.8 µg/L	3.0 µg/L
Lead	Clean Water Act	53 µg/L	Maintain Compliance	0.79 µg/L	0.84 µg/L	1.10 µg/L	0.81 µg/L	0.65 µg/L
Mercury	Clean Water Act	1 µg/L	Maintain Compliance	0.022 µg/L	0.027 µg/L	0.03 µg/L	0.026 µg/L	0.0073 µg/L **
Nickel	Clean Water Act	65 µg/L	Maintain Compliance	6.2 µg/L	8.5 µg/L	4.3 µg/L	4.8 µg/L	3.8 µg/L
Selenium	Clean Water Act	50 µg/L	Maintain Compliance	0.24 µg/L	0.18 µg/L	0.315 µg/L	0.36 µg/L	0.28 µg/L

<sup>4</sup> Data sources: University of North Carolina National Database Report, Baseline Table 4: Regulatory Requirements; Update Table 5: Change in Regulatory Requirements; EMS Design Table 5: Planned Dates of Objectives and Targets; and Design Update Section 6.

\* - Estimate represents the facility's annual maximum emission rather than its average emission.

\*\* - Reduction is the result of an improved analytical process.

Regulatory Requirement			Objective and Target (if one identified for regulatory requirement)	Environmental Performance Measure				
Permitted Emission	Regulation	Permit limit		1996	1997	1998	1999	2000
Silver	Clean Water Act	23 µg/L	Maintain Compliance	0.88 µg/L	0.41 µg/L	0.4 µg/L	0.5 µg/L	0.7 µg/L
Zinc	Clean Water Act	580 µg/L	Maintain Compliance	61 µg/L	57 µg/L	54 µg/L	47 µg/L	41 µg/L
Total Cyanide	Clean Water Act	25 µg/L	Maintain Compliance	5.6 µg/L	5.9 µg/L	<11 µg/L	5 µg/L	5 µg/L
Phenols	Clean Water Act	500 µg/L	Maintain Compliance	50 µg/L	<50 µg/L	<50 µg/L	14 µg/L	9 µg/L
Biosolids – % Solids	Other – Landfill Requirements	20.0 % minimum	Maintain Compliance	20.3 %	19.6 %	19.4 %	19.0 %	19.9 %
NOx	Clean Air Act	508 lbs/day	Maintain Compliance	276 lbs/day*	72 lbs/day*	N/A	N/A	N/A
Carbon Monoxide	Clean Air Act	533 lbs/day	Maintain Compliance	93 lbs/day*	98 lbs/day*	N/A	N/A	N/A

**Table 5. Compliance Information for Central Marin Sanitation Agency<sup>5</sup>**

Infraction	Historic	Baseline				
		1996	1997	1998	1999	2000
Major Violation		0	0	0	0	0
Significant (Moderate) Violation		0	0	0	0	6*
Minor Violation		0	0	1	0	0
Non-Compliance		12	8	5	2	0
Potential Non-Compliance		0	0	2**	0	0

Note: Most EPA enforcement policies explicitly utilize “Major, significant (moderate) and minor” classifications to determine the appropriate enforcement response to a given violation. A Non-compliance is an infraction either discovered by the regulated party or environmental agency that does not lead to violation. A Potential Non-compliance is a situation that is discovered and corrected before a violation could occur.

\* - The appearance of “moderate violations” in 2000 is not a reflection of plant performance but is due to a change in applicable law. California State Bill 709, effective in 2000, mandated a monetary fine for exceedances (settleable solids and short duration/intensity chlorine residual events) which the Regional Water Quality Control Board did not previously consider permit violations.

\*\* - All infractions reported above are exceedances of NPDES permit effluent limits, except for the two “potential non-compliances”. The two potential non-compliances were two spills of hazardous materials which were contained in-plant and cleaned-up by CMSA personnel.

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<sup>5</sup> Data Sources: University of North Carolina National Database Report, Baseline Report 3: Violation Report; Baseline Report 4: Non-compliance/Potential Non-Compliance Report; and Update Report 5: Violation Report; and Update Report 6: Non-compliance/Potential Non-Compliance Report.

**Table 6. Environmental Information Type and Availability to Public<sup>6</sup>**

Information Subject	Legal Reporting Requirement		Location of Public Information					
	Yes	No	Web site	Public Relations Dept.	Newsletter	Annual Report	Environmental Agency	Other
EMS Policy		X						X
EMS Env. Aspects		X						
EMS Env. Impacts		X						
EMS Objectives and Targets		X						
Operation and Procedures		X	X					
Compliance information	X					X	X	
Hazardous waste generation	X						X	
Air emissions	X						X	
Water discharge	X					X	X	
Resource use: energy		X						
Resource use: water		X						
Resource use: materials		X						
Solid Waste		X						
TRI		N/A						
Community Right to Know	X							X
Prop. 65	X							X
Other								

<sup>6</sup> Data Sources: California Supplemental Protocols

Note: For Legal Reporting Requirement, mark NA if not applicable.

